We claim:

1. A method of using a treatment fluid in a subterranean formation comprising introducing a treatment fluid having a density that varies as a function of pressure into a subterranean formation, wherein the treatment fluid comprises a base fluid and a portion of variable pressure weighting material particles.

2. The method of claim 1 wherein the treatment fluid is used as a well fluid.

3. The method of claim 2 wherein the well fluid is selected from the group consisting of drilling fluids, completion fluids, and stimulation fluids.

4. The method of claim 2 wherein the well fluid is selected from the group consisting of drilling muds, well cleanup fluids, workover fluids, spacer fluids, gravel pack fluids, acidizing fluids, and fracturing fluids.

5. The method of claim 4 further comprising the step of drilling, completing and/or stimulating a subterranean formation using the treatment fluid.

6. The method of claim 5 further comprising the step of producing a fluid from the subterranean formation.

7. The method of claim 6 wherein the fluid comprises oil, gas, or a mixture thereof.

8. The method of claim 1 wherein the treatment fluid has a density at sea level in the range of from about 6 lb/gallon to about 18 lb/gallon.

9. The method of claim 1 wherein the base fluid is oil, water, or a mixture thereof.

10. The method of claim 1 wherein the base fluid is present in the treatment fluid in an amount in the range of from about 60% to about 99.99% by volume.

11. The method of claim 1 wherein the portion of variable pressure weighting material particles is present in the treatment fluid in an amount in the range of from about 0.01% to about 40% by volume of the treatment fluid.

12. The method of claim 1 wherein the variable pressure weighting material particles have a specific gravity in the range of from about 0.1 to about 0.5.

13. The method of claim 1 wherein the variable pressure weighting material particle further comprises a compressible fluid.

14. The method of claim 13 wherein the compressible fluid comprises air, propane, ammonia, fluorinated hydrocarbon refrigerants, nitrogen, carbon dioxide, argon or a mixture thereof.

15. The method of claim 1 wherein a portion of the variable pressure weighting material particles can withstand a pressure of up to about 21,000 psi without crushing.

16. The method of claim 15 wherein a portion of the variable pressure weighting material particles can rebound to about their original size and shape when pressure is removed.

17. The method of claim 1 wherein a portion of the variable pressure weighting material particles can withstand temperatures up to about 500°F without degrading.

18. The method of claim 1 wherein the subterranean formation comprises a borehole, and wherein the density of the treatment fluid increases as the pressure in the bore hole increases.

19. The method of claim 18 wherein the density of the treatment fluid in the bore hole is in the range of from about 0.01% to about 300% higher than its density at sea level.

20. The method of claim 1 wherein the subterranean formation is located beneath the ocean floor.

21. The method of claim 20 wherein the density of the treatment fluid decreases as the treatment fluid travels from the ocean floor to sea level.

22. The method of claim 1 wherein the treatment fluid further comprises a salt, a fluid loss additive, a shale swelling inhibitor, an emulsifier, a viscosifier, caustic, or a fixed-density weighting agent.

23. The method of claim 1 wherein the variable pressure weighting material particle comprises a material selected from the group consisting of: a plastic, an elastomer, and a metal.

24. The method of claim 23 wherein the metal is a memory metal.

25. The method of claim 18 wherein the density of the treatment fluid in the borehole is sufficient to prevent kicks without fracturing a region of the subterranean formation adjacent to the borehole.

26. A method of preparing a variable pressure weighting material particle comprising the step of pressurizing and sealing a hollow rod or tube formed from an elastically deformable material.

27. The method of claim 26 wherein the step of pressurizing and sealing a hollow rod or tube further comprises the steps of:

crimping and sealing an end of the tube;

pressurizing the tube to a desired pressure; and

crimping and sealing the opposite end of the tube.

28. The method of claim 27 further comprising the step of cutting the tube to a desired length.

29. A method of preparing a variable pressure weighting material particle comprising the step of pressurizing and sealing an assembly of multiple sheets of elastically deformable material together.

30. The method of claim 29 further comprising the step of providing holes having a diameter in the middle sheet.

31. The method of claim 30 wherein the step of pressurizing and sealing an assembly of multiple sheets further comprises pressurizing the manufacturing process to a desired pressure.

32. The method of claim 31 further comprising the step of punching the resulting variable pressure weighting material particle from the assembly, wherein the punch diameter is slightly larger than the hole diameter, and concentric to it.

33. The method of claim 32 wherein the outer two sheets are dimpled to provide stiffness.

34. A variable density treatment fluid comprising:

a base fluid; and

a portion of variable pressure weighting material particles.

35. The treatment fluid of claim 34 wherein the base fluid is water, oil, or a mixture thereof.

36. The treatment fluid of claim 34 wherein a portion of the variable pressure weighting material particles further comprise a compressible fluid.

37. The treatment fluid of claim 36 wherein the compressible fluid comprises air, propane, ammonia, fluorinated hydrocarbon refrigerants, nitrogen, carbon dioxide, argon or mixtures thereof.

38. The treatment fluid of claim 34 having a density at sea level in the range of from about 4 lb/gallon to about 18 lb/gallon.

39. The treatment fluid of claim 34 wherein the base fluid is present in the treatment fluid in an amount in the range of from about 60% to about 99.99% by volume.

40. The treatment fluid of claim 34 wherein the portion of variable pressure weighting material particles is present in the treatment fluid in an amount in the range of from about 0.01% to about 40% by volume of the treatment fluid.

41. The treatment fluid of claim 34 wherein a portion of the variable pressure weighting material particles have a specific gravity in the range of from about 0.1 to about 0.5.

42. The treatment fluid of claim 34 wherein a portion of the variable pressure weighting material particles can withstand a pressure up to about 21,000 psi without crushing.

43. The treatment fluid of claim 42 wherein a portion of the variable pressure weighting material particles can rebound to about their original size and shape when the pressure is removed.

44. The treatment fluid of claim 34 wherein a portion of the variable pressure weighting material particles can withstand temperatures up to about 500°F without degrading.

45. The treatment fluid of claim 34 wherein the density of the treatment fluid increases as the pressure in a subterranean bore hole increases.

46. The treatment fluid of claim 45 wherein the density of the treatment fluid in the bore hole is in the range of from about 0.01% to about 25% higher than its density at sea level.

47. The treatment fluid of claim 45 wherein the bore hole is located beneath the ocean floor.

48. The treatment fluid of claim 47 wherein the density of the treatment fluid decreases as the treatment fluid travels from the bore hole up to sea level.

49. The treatment fluid of claim 34 further comprising a salt, a fluid loss additive, a shale swelling inhibitor, an emulsifier, a viscosifier, caustic, or a fixed-density weighting agent.

50. The treatment fluid of claim 34 wherein the variable pressure weighting material particle comprises a material selected from the group consisting of: a plastic, an elastomer and a metal.

51. The treatment fluid of claim 50 wherein the metal is a memory metal.

52. The treatment fluid of claim 45 having a density sufficient to prevent kicks without fracturing a region of the subterranean formation adjacent to the borehole

53. A variable pressure weighting material particle comprising a hollow, elastically deformable particle.

54. The variable pressure weighting material particle of claim 53 further comprising a compressible fluid.

55. The variable pressure weighting material particle of claim 54 wherein the compressible fluid comprises air, propane, ammonia, fluorinated hydrocarbon refrigerants, nitrogen, carbon dioxide, argon or a mixture thereof.

56. The variable pressure weighting material particle of claim 52 having a specific gravity in the range of from about 0.1 to about 0.5.

57. The variable pressure weighting material particle of claim 52 being capable of withstanding a pressure up to about 21,000 psi without crushing.

58. The variable pressure weighting material particle of claim 56 being capable of rebounding to about its original size and shape when pressure is removed.

59. The variable pressure weighting material particle of claim 52 being capable of withstanding temperatures up to about 500°F without degrading.

60. The variable pressure weighting material particle of claim 52 having an internal pressure in the range of from about 0 psi to about 100 psi.

61. The variable pressure weighting material particle of claim 52 comprising a material selected from the group consisting of: a plastic, an elastomer, and a metal.

62. The variable pressure weighting material particle of claim 60 wherein the metal is a memory metal.

63. The variable pressure weighting material particle of claim 52 having an external diameter small enough to be circulated through equipment used in subterranean formation well bore treatment without fouling such equipment.

64. The variable pressure weighting material particle of claim 62 having an external diameter of less than about 1/8".